

# Water Quality in the Northern Atlantic Coastal Plain Aquifer System

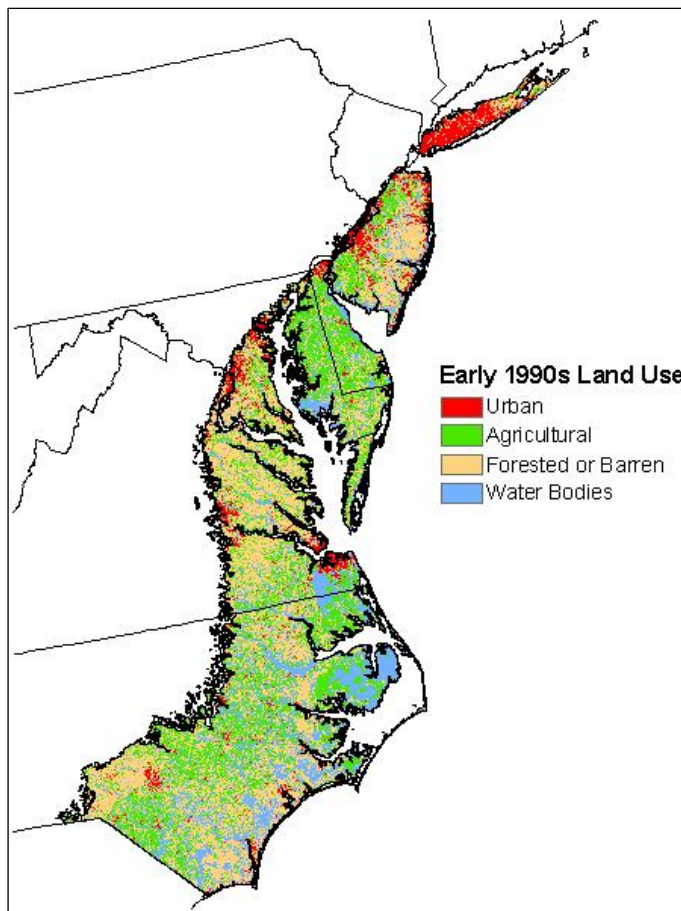
## NATIONAL WATER-QUALITY ASSESSMENT PROGRAM

Water quality is being assessed for the Northern Atlantic Coastal Plain (NACP) aquifer system as a part of the National Water-Quality Assessment (NAWQA) Program. The NACP aquifer system covers about 50,000 square miles extending from the North Carolina-South Carolina border northward to Long Island, New York. The aquifer system is bounded on the west by the Fall Line, which separates the Piedmont and Coastal Plain Physiographic Provinces, and on the east by the Atlantic Ocean. The NACP aquifer system consists of six regional aquifers in primarily unconsolidated sedimentary deposits that vary texturally both laterally and vertically and form aquifers of varying extent. These aquifers are composed of sand, gravel, and limestone and are separated by confining units of silt and clay.

A large amount of water (over 2,000 million gallon per day) is withdrawn from the NACP aquifer system for drinking water supplies, most of which is extracted from the surficial aquifer or where confined aquifers outcrop or subcrop along the Fall Line near large metropolitan areas. Many of the confined aquifers are affected by salt water intrusion in the down-dip portions of their extent and thus, require careful attention to development and water-quality monitoring.

The goals of this study are to assess the occurrence, sources,

movement, and fate of contaminants in the NACP aquifer system to better understand and predict potential adverse effects of ground-water contamination on drinking-water supplies and aquatic health. The study focuses on important regional topics, such as effects of natural and human influences on regional water quality and the transport of contaminants through shallow ground water. Data were collected from 409 wells from 1991 through 2003 within four NAWQA study areas that are located in the NACP.

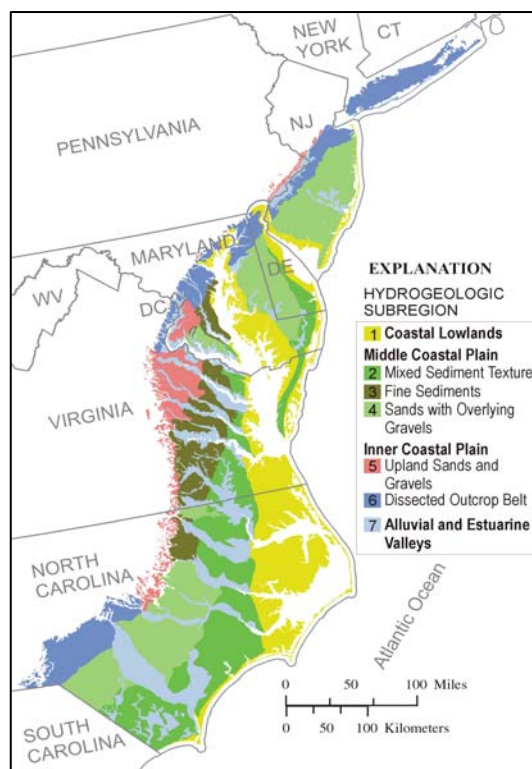


**The Northern Atlantic Coastal Plain Aquifer  
System showing Land Use**

The surficial hydrogeologic framework, composed of seven subregions, was developed based on the physiography and texture of surficial sediments. These natural physical factors govern the occurrence and transport of contaminants to shallow ground water and streams and are relatively consistent within each of the sub-regions. The framework thereby serves as the basis for regional stratification of data and interpretation in describing regional variability in water-quality conditions throughout NACP.

Water quality also is related to land use, pointing to relations between shallow ground-water quality and anthropogenic factors associated with agricultural settings, developing and urban centers, and undeveloped areas. Because land use is diverse across the NACP, the area is ideal for establishing such relations.

The results of this study will be communicated to the public and to the scientific community through USGS interpretive reports, journal articles, and presentations at scientific and public meetings.



**The Northern Atlantic Coastal Plain Aquifer System showing Surficial Hydrogeologic Subregions**

<b>Northern Atlantic Coastal Plain Aquifer System Reports</b>		
<b>Topic</b>	<b>Status</b>	<b>Timeframe</b>
Natural and human influences on shallow ground-water quality in the Northern Atlantic Coastal Plain	Publication	2008
Transport and transformations of nutrients and pesticides along shallow ground-water flow paths in different hydrogeologic settings of the Northern Atlantic Coastal Plain	Publication	2008
Chemical quality of domestic and public ground-water supplies	Data compilation and analysis	2007-2009
Use of conservative mixing models to evaluate contributions from multiple aquifers to Coastal Plain streams	Planning	2008-2010
Summary Circular: key findings and issues from all the above studies	Planning	2008-2012

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The USGS is committed to making its unbiased scientific information available to interested parties, and promotes public access to its water information to help meet water-resource needs. External coordination is critical for a fully integrated understanding of aquifers and cost-effective management and protection of our ground-water resources. NAWQA, therefore, depends extensively on the information and input from other agencies and organizations. Assistance and suggestions are greatly appreciated.